

Who Controls the Network?

The reallocation of the D Block to Public Safety involves many issues including funding the network, how much capacity is needed by Public Safety on a daily basis, and how the network can be used to provide broadband services for non-Public Safety use.

It is clear to me that at the core of this debate is the issue of who will actually control the D Block and manage how it is allocated when there is available capacity. The FCC's position is that the D Block should be owned, operated, and managed by commercial network operators that will work in conjunction with Public Safety on an as-needed basis. Access to the commercial network will be on a priority basis for Public Safety, and the FCC seems to believe priority access is sufficient.

The Public Safety side of the debate is that Public Safety should own, operate, and manage the network and where there is capacity; others should be able to use the network with Public Safety being able to take full control of all of the spectrum on an as-needed basis. Those that would be using the D Block and perhaps some of the Public Safety spectrum as well in rural areas would enter into agreements that would predefine their rights of access. They would become customers of Public Safety with a full understanding that Public Safety has complete and pre-emptive rights to all 20 MHz of the spectrum when needed.

Public Safety has said repeatedly that it is more than willing to work with others and enter into public-private partnerships but that it needs full control over the network's daily operations. Rightfully, Public Safety questions the viability of a commercial network operator deciding where and when to grant priority access to Public Safety. This is a valid concern and neither the FCC nor the commercial operators have addressed it to the satisfaction of the Public Safety community, though Public Safety has been outspoken about how its solution would work.

The amount of available spectrum will change based on geographic area, population density, time of day, and the type and scale of incidents in which the Public Safety community is involved. Meanwhile, commercial operators continue to face increased demand for voice, text, data, and video services from their customers and it is well known that during times of major Public Safety activity, e.g., for a bank robbery or a multi-car collision that can occur any time of day, the demand for broadband and voice services spike for both commercial networks and Public Safety. Expecting a commercial operator to deny service to its regular customer base to satisfy Public Safety's needs will be almost impossible to mandate. Even if mandated by the FCC, the commercial network operator will have to decide whether it agrees with a request for priority access on its network on an incident-by-incident basis.

Commercial networks are run by large companies with multiple layers of management and they have operations centers that may be hundreds or thousands of miles from the incident in question. Public Safety's need for bandwidth is immediate and cannot be pre-planned. Having to request priority access and have it granted on an incident-by-incident basis is not a practical solution. Delays in providing the bandwidth could hamper personnel at the incident. On the other hand, I don't believe commercial network operators would agree to Public Safety being able to

grant itself priority access without regard to how congested the commercial network traffic may be. The units in the field that request priority service would be competing with commercial customer requests for service, so it does not appear that there would ever be true “right now” Public Safety priority access to commercial networks. The FCC’s other answer is to pre-stage additional cell capacity mounted on vehicles that can be deployed to an incident when needed. This, too, is unrealistic except for long-term incidents of major proportion such as hurricanes, floods, fires, and the like.

Therefore, the Public Safety community has presented its own idea for priority network management, which is to reverse the process of who has control. Instead of having to contact the commercial network operator or work with it on gaining priority access at some future point in time (time is critical, especially in the early stages of an incident), control over the network would be given to the Public Safety network operator and would be managed in real time. This would provide Public Safety with the assurances that it would have full, pre-emptive priority over all of the spectrum on an as-needed basis.

I believe that commercial users, knowing the circumstances of their network usage ahead of time, would sign up for service and work with Public Safety. I also believe that Public Safety will be cognizant of commercial users’ needs and would take only what additional spectrum is needed for an incident, perhaps bumping the commercial customer down to a lower data rate. If the incident grew and new bandwidth was needed, the commercial customer would be bumped down again and not have any access until such time as Public Safety’s demand for broadband services was reduced.

This method will work, and it is especially viable if you consider that Public Safety will not have to work with individual commercial customers and compete with commercial network operators. Rather, it will work with other city, county, and state agencies, rural power companies, perhaps some rural cellular companies, and organizations that want to use the network to provide broadband to commercial customers in rural America for education, medical, and other uses. These types of partnerships can provide access to both the Public Safety community and these other tenants, and reduce Public Safety’s cost of building out the network and day-to-day operations.

The business model for developing this type of network is readily apparent, as is the fact that as the networks are built out, they will provide broadband services to rural customers years ahead of anything under consideration today. A few examples of the types of partners Public Safety could work with are:

- Rural power companies
 - What they want
 - Smart grid access
 - Broadband access
 - Would like to resell broadband to their rural customers
 - What they have to offer
 - High-tension towers for site location
 - Right-of-ways for backhaul systems

- Trucks in the field that can be used to equip their rural customers for broadband
 - A desire to partner with Public Safety on this network
- Educational institutions
 - What they want
 - To partner for broadband connections to schools and the student community
 - What they have to offer
 - Access to schools and other properties for cell sites
 - Lease agreements
- Other government agencies
 - Need broadband access
 - City power and water companies
 - Other city agencies
 - Suburban county governments
 - Rural county governments
 - State agencies
 - What they have to offer
 - Lease agreements (funding)
 - Additional sites on government-owned properties
- Tribal lands
 - Need broadband access
 - For Tribal Public Safety
 - For Tribal broadband services
 - What they have to offer
 - Lease agreements
 - Tower sites
- Rural medical services
 - What they need
 - Connections to medical facilities
 - Connections to doctors' offices
 - Connections for visiting nurses
 - What they have to offer
 - Lease agreements
 - Access to medical buildings for cell sites

There are many more types of organizations that could be potential partners, but the above list includes enough organizations to make a solid business case for building out the network as envisioned by the FCC: 44,000 cell sites covering 95% of the population.

In most major metro areas, Public Safety will be using all of the spectrum most of the time. In smaller metro areas, suburbs, and rural areas, there should be enough bandwidth available for

these other services, again with the caveat that Public Safety will have full control over the network and be able to allocate resources on an ongoing basis. One example might be in a rural area where a power company is using part of the bandwidth for meter reading at 2:00am and there is a major fire. First responders would use more bandwidth during the incident, including some or all of the spectrum normally available for meter reading, until the incident commander can release some bandwidth, at which time it would be reallocated back to the power company.

The results would be almost the same as what is envisioned by the FCC

- Funding to help with the construction and operation of the network
- Sharing of bandwidth when available
- Public/private partnerships

The ONLY difference here is that the Public Safety community would manage the broadband network. The network would be more tightly integrated for Public Safety devices and applications, and during times of need, Public Safety would not have to contact a commercial network operator to request priority access. All of the other aspects of the FCC National Broadband Plan would remain in place, including Public Safety roaming over commercial networks when there are major incidents, but this type of roaming would not be needed on a daily basis and it would fall under the FCC's plan.

I don't believe commercial network operators want to be in a position of having to make their networks available on a priority basis every day in major metro areas, nor do I believe the type of priority access available in the LTE specifications meets the needs of the Public Safety community. There is no guarantee of full pre-emptive priority, nor are there any mechanisms to ensure that during times of elevated demand on both commercial and Public Safety networks, Public Safety will truly have the level of priority it needs to protect and save.

Further, while LTE is a standard, there are several Public Safety application requirements that are different from those of most commercial customers. Commercial and Public Safety networks operate differently and roaming on commercial networks could result in confusion in the field at times when there is enough confusion in trying to handle the incident. Indeed, LTE is the smartest of all broadband technologies to date and there are many different ways to set allowable data rates, handle capacity, and handle traffic overflows. Most commercial network operators configure their networks to serve the greatest number of commercial customers by managing available bandwidth. Even with priority, there is a serious risk that the most important Public Safety users will be shut out of the network. This is simply not acceptable for mission-critical Public Safety communications.

Reallocating the D Block to Public Safety does not impede private/public partnerships nor does it change the fact that commercial customers can be accommodated over the network, but it does mean that Public Safety will be able to earn revenue from such usage. In fact, it does not diminish any aspect of the FCC's vision for Public Safety, it simply changes who has control of the network so Public Safety is guaranteed full access when needed.

This seems like a reasonable modification to the FCC's recommendations though it does prevent the government from collecting auction funds for the D Block. But in the overall scheme of things, even if the funds amount to \$3 billion, that is less than one day's growth of our national debt. Reallocating the D Block to Public Safety is the best approach for all of the stakeholders, including the FCC.

Andrew M. Seybold